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VOYAGE
TO THE
NORTH POLE,

IN THE FRIGATE THE SYRENE;

INCLUDING

A PHYSICAL AND GEOGRAPHICAL NOTICE

RELATIVE TO

THE ISLAND OF ICELAND.

BY THE

CHEVALIER DE LA POIX DE FREMINVILLE,

LIEUTENANT, CHIEF OF THE BRIGADE OF THE MARINE CAETS, AND A
MEMBER OF SEVERAL LEARNED SOCIETIES.

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1819.



THE CHEVALIER DE FREMINVILLE

TO THE EDITOR.

Brest, June 19, 1819.

AT a time when the Literati of Europe are waiting with anxiety the result of the new expedition which the English government have sent to explore the passage to the North Pole, and to resolve the problem whether Greenland be an island ; it may be presumed that a brief relation of a Voyage to the North Sea, in 1806, performed by some officers of the French marine, of whom I was one, will prove acceptable and interesting.

This expedition, after encountering a number of difficulties, penetrated to latitude 80° ; and it will be observed, that the attempt made by the English last year could only penetrate those seas to the latitude of 80° 32". In the course of our voyage, the various interesting incidents that occurred, particularly at the Island of Iceland, will render this brief narrative, I venture to affirm, not only worthy of observation, but highly interesting.

He was a man of great energy and determination, and he worked hard to establish himself in the business world. He had a strong work ethic and believed in the importance of hard work and dedication. He was also a man of great integrity and honesty, which made him a respected member of his community.

the first time in the history of the country, the
Government has been compelled to take such a step,
and it is a step which will be of great benefit to
the country, as it will put an end to the
present state of things, and will bring about a
more peaceful and quiet condition of affairs.

VOYAGE TO THE NORTH POLE.

Relation of a Voyage made to the North Pole, in the Frigate the Syrene; including a Physical and Geographical Notice relative to the Island of Iceland. By the CHEVALIER DE LA POIX DE FREMINVILLE, Lieutenant, Chief of the Brigade of the Company of the Marine Cadets, and a Member of several learned Societies.

SINCE the time of Duguay Trouin, the French government had not turned its attention to the North Seas. In the course of the last war, an expedition to these seas was projected, for the purpose of annoying the whale-fishery carried on there by the English, and to take and destroy the vast fleets that are annually employed by them in this trade. Such a scheme was pregnant with much danger; nevertheless, the advantages likely to result from it were great in more relations than one. Government, therefore, now resolved to put the plan in practice; and, in consequence, three frigates were armed. The command of the squadron was confided to Captain le Duc, an experienced seaman, who had already made several voyages in the Hyperborean Ocean.

A resolution was taken to collect every possible advantage from an expedition that should advance as near as possible to the pole, to penetrate into seas almost hitherto unexplored; military operations were not to be the only object; the sciences were to come in for a share of the probable benefits. Captain le Duc, in his instructions, was directed to let slip no opportunity to avail himself of any astronomical and geographical observations and facts that might conduce to the improvement of our hydrography, to this day very imperfect, with respect to the North Seas.

The minister of marine determined that an officer should embark, as supplementary, in the frigate the Syrene, wherein the commodore sailed, to superintend, in an especial manner, the hydrographic labours. I was selected for this undertaking; a better choice might doubtless have been made; but

well knowing how to value a distinction of this honourable kind, I can with truth affirm, that our scientific operations, during the voyage, are entitled to a measure of public confidence. On our return, our papers were submitted to the inspection of the illustrious Bougainville; and this prince of French navigators was pleased to sanction them with his approbation.

The division, or squadron, consisting of the frigates the Syrene, the Guerrière, and the Revanche, put to sea on the 28th of March, 1806. After frequent calms for a number of days together, in the gulph of Gascony, a very violent gale dispersed them, and obliged the Syrene to make for the Azore Islands, which had been fixed upon as the first point of rendezvous in case of separation.

After cruising two days within view of the isles of Corvo and Flores, the squadron again got together, and immediately bore away in a northerly direction.

We were not long before we felt the effects of a piercing cold, which gave us reason to regret the mild temperature of the Azores. Continual foul weather, which did not allow us for fifteen days to sail, except with lowered topsails, led the captain to conceive, that as the rigorous season was likely to be of longer continuance than usual, it was too soon to attempt a passage into the frigid zone; in consequence of this, he determined to cruise about ten or twelve days in the latitude of Cape Farewell, on the coast of Greenland.

Our course, in coming from the Azores to these latitudes, had passed over the points wherein a number of doubtful spots are marked on the great chart of the Atlantic Ocean, published in 1786; and which, perhaps, have no existence, or only form the little island of Jaquet, inaccurately fixed by the voyagers to Newfoundland; their reports, it is certain, have often obtained more credit than they were entitled to.

We steered for ten days on the parallel of 59 deg. 30 min. but having to encounter very rough gales of a northerly wind, all our endeavours to keep longer in that bearing were fruitless. Being obliged to keep close to the Cape, we were driven back to the south, as far as the 58th parallel. To make some advantage of a circumstance so contrary, we beat about for the Isle of Bas, or Wrishland, placed in the chart of M. de Verdun in 58 deg. 11 min. lat. N. and in 28 deg. 13 min. lon. W. This islet, which was nothing but an extinguished volcano, had become a rendezvous for the Greenland fishermen who first discovered it; the Dutch had formed some establishments on it, for the preparation of whale-oil, but it disappeared about sixty years ago, and has never since been

noticed. It is conceived, that, like many other volcanic islets, it has been swallowed up by some submarine convulsion, examples of the like having frequently occurred.

Reaching the point assigned to the Isle of Bas, in the chart above cited, we could trace no vestige of it; but as we had a rough sea, with short and rippling waves, we judged we might be over the spot it once occupied. We sounded for better assurance; but a line of 200 fathoms could find no bottom. Such submarine phenomena, doubtless the most extraordinary of any that volcanic eruptions produce, are frequent in the Northern Ocean, at least in the tracks occupied by the long volcanic chain that stretches from the 58th to the 72d degree of latitude. This chain commences to the north of Scotland; and the basaltic archipelagos of the Hebrides, of the Orkneys, and Shetland Isles, form the first rings of it. Stretching afterwards to the N. W. across the oceanic whirlpools, it appears again at the Ferro Islands, then at Iceland, the most extensive theatre of ignivorous eruptions to be found on the surface of our globe. From Iceland, the chain goes on to join the Isle of Jean Mayen, or Trinity, where it appears to end, after traversing under water a space of more than 260 marine leagues. In advancing more to the north, we find nothing in the character of the lands that presents features of a volcanic soil; Bear's Island, and Spitzberg, are wholly calcareous.

The weather now becoming milder, we bore away for the north; and in a few days we had sight of the coasts of Iceland. Their dark profile delineated a rough sketch of its steep, rocky, indented shores, on a misty horizon; in the N. W. at a very considerable distance, appeared an enormous mountain, which we judged might be Mount Hecla; but the bad weather, for three days successively, not admitting of any astronomical observations, I will not affirm that it was actually that famous volcano, which had now been in a tranquil state the twelve preceding years.

We made sail for the north-east, coasting the land, but at a considerable distance; the weather cleared up, during the short night which succeeded to the day of our seeing land, and a pure serene sky on the day ensuing brought to view, on another point of the coast, a *jokul*, or mountain, of a prodigious height, entirely covered with snow; its summit, which reached far above the clouds, reflected the rays of the rising sun, which tinging it with a beautiful rose-colour, blended insensibly with the whiteness of its flanks, and produced an admirable effect. Our observations enabled us to

ascertain this mountain for the jocul of Knapafells, on the point of Wester, to the S. E. of the island.

Being thus assured of our position, we bore away at large, keeping always to the E. N. E. We were in the track wherein the maps generally place the Isle of EnckuySEN, the existence of which was, nevertheless, considered as very doubtful. In our course we must have passed directly over the point wherein the chart of Bellin places it. As the problem of its existence was a matter of some interest to resolve, and we could effect it without going out of our course, we stationed some of our company on the look-out.

At night-fall some of the men gave notice of a shoal, or ridge, a-head; in fact, the sea, at a little distance in front, seemed to us covered with thousands of birds, of the kind of petrels and seagulls, the vast numbers of which, from their white plumage, resembled at a distance the froth of waves rippling over breakers; we went about a mile to windward of the pretended shoal, and discovered it to be the floating and half putrid carcase of a dead whale, thus serving for food to an immense multitude of sea-fowl.

Next day, May 12, we discovered land; it was, in reality, the Isle of EnckuySEN, to the N. N. W. of us, at the distance of about two leagues and a half. We fixed the position of its southerly point at 64 deg. 54 min. lat. and 12 deg. 48 min. long. W.

The Isle of EnckuySEN, generally placed in the charts much too westerly of its real situation, and too near the coast of Iceland, appeared to us to be about four leagues in extent, in the direction of N. N. E. to S. S. W.; it has just elevation enough not to render the approach dangerous.

May 14th, we crossed the Arctic polar circle at 10 deg. 14 min. long. W.

May 17th. In the latitude of 72 deg. we noticed, with surprise, the first floating ice; it was unusual for the season to meet with ice so early; it is usually to be found about the middle of May, but only in from 76 to 80 degrees of latitude. Captain Phipps sent, in 1773, from England, to explore the passage of the Pole, could see no ice till he had reached the N. W. part of the coast of Spitzberg.

Next day we came abreast of a very large island of floating ice, with fleaks of prodigious dimensions; these masses, doubtless detached from the immense banks that surround the Spitzberg, from the diversity of their shapes, and their curious inflections and indentations, presented a spectacle altogether unique for most of our company. Their friction produced a

stunning kind of noise, like that which the sea-water makes over a strand of pebbles and gravel.

We cleared those mountains of ice-flakes, many of which rose to the height of our main-top-mast; they were transparent, and of a most beautiful azure blue.

Still bearing on to the N.E. we endeavoured to near Beering Island (*Beereh Eylandt,*) situated in 74 deg. 33 min. lat. Its extent is not above four or five leagues. It is reported that the Russians have discovered in it a very rich silver mine.

May 19th, at midnight, (there was no darkness then during the night) a bluish lustre, visible in the horizon, warned us of the approach of the ice. This phenomenon, produced by the refraction of the rays of light on the water, is a sure sign of the proximity of considerable bergs; in fact, we observed one soon after, but consisting of blocks so large and so close together, that there appeared no interval through which we could penetrate. We coasted along it for several hours; it was covered with thousands of *phocæ*, that is, seals, or sea-calves (*phoca vitulina, L.*) that were rolling about, and seemed to be sporting in the snow. We were so near that we could salute them with discharges of our musketry, but were unable to kill any, as the balls merely slid over their hard smooth skin without piercing it. Knowing that they were dispatched at once with a blow on the nose, we prepared a boat and descended, to the number of seven or eight, among immense heaps, the smallest of which were five feet in length. Our presence did not terrify them, and they viewed us with a stupid kind of stare. We knocked some of them on the head with our oars, when they tried to make their escape, uttering a noise like the shrill barking of a young dog.

It is generally thought that seals derive the faculty which they possess of staying long under water, to the botal aperture, which they preserve during life.* I wished to inform myself on this important point of comparative anatomy, and took care to open the heart of one of those we had taken; I found the notion to be erroneous, that the botal aperture was entirely closed, and that, of course, the blood could not pass from the veins into the arterial system without previously crossing the lungs; then to disengage itself by the contact of the external air from the carbone which it contains. It is evident, therefore, that although seals may plunge under water for a consi-

* In hot-blooded animals, the botal aperture is only to be found in the fetus, and becomes extinct instantly after the birth.

derable time, respiration is as necessary to promote the circulation of their blood as it is in other mammiferous animals; neither can they dispense with the necessity of coming up to the surface of the water, from time to time, to take breath.

I found the stomach of my seal filled with intestinal worms alive, that appeared to me to belong to the genus of *echinorhynchs*.

In proceeding along the borders of the ice, we found it stretching along to the east, after having obliged us to mount up to 75 deg. 28 min. and having, in course, passed by the latitude of Beering Island, the pursuit of which we now discontinued.

May 22d, a profound calm surprized us, in sight of an island of ice of considerable length and extent. As long as the calm lasted we were hemmed round with a groupe of cetaceous animals, from twenty-five to thirty feet in length, marked as the genus *Delphinus*, by Linnaeus, but which, I conceive, ought to constitute a new species. I have already published a description of them, with cuts, in the Bulletin of Sciences of the Philomathic Society, under the name of *Delphinus Coronatus*, or the Crowned Dolphin; this epithet comes from two concentric circles, of a yellow colour, that these animals have on the crown of the head.

A breeze springing up in the night, we were drawing nearer to the islet of ice that stood to the north of us; we tried to find an opening or passage, but none appeared; and after coasting it a long time, keeping to the east, we perceived it ready to join another considerable mass, and that the interval between them was so narrow and so perplexed with floating flakes and heaps of ice, that a passage was impracticable. We tacked about with an intention to double its western extremity, which we could not accomplish till next day.

After clearing it we bore to the north-east, falling straight in with the south Cape of Spitzberg, which we were in hopes of soon reaching; but in this we were disappointed, as another island of ice came to present new obstacles. On the eastern side of it we could perceive an opening or avenue; we plunged into it, but scarcely had we entered, when a thick fog came over us and obliged us to exert particular care to avoid striking against some of the large floating fragments of ice that surrounded us.

The fog lasted two hours; when, clearing up, we could see the ice behind us closing up so as to intercept our return. We were now ingulphed on every side, immured as in a kind of basin that might be about two leagues in extent. This, to

us, was a situation truly alarming ; we tacked about in every direction in quest of an outlet ; one only was visible ; but the floating fragments that blocked it up made the attempt to be, at first, considered as impracticable. At length our commandant, finding the icy-basin that shut us in was condensing and accumulating, decided that we had no time to lose, or hesitate between the certainty of being quickly locked in the ice and a solitary chance of escape. We made all sail then to get through this perilous strait ; and, after running the risk a hundred times of being dashed against the floating shoals that were thickening around us, we were fortunate enough to clear the passage with the loss only of some sheets of our copper, that were carried away by icy morsels we had to bear up against.

May 31st, we discovered the land of Spitzberg ; at a very great distance we could trace the South Cape, which stood N.N.E. as also Hope Island, which lies a little more to the east, at a short distance. A solid plain of impenetrable ice prevented our getting near it, and, being obliged to stretch along it in a run to the north-west, we soon lost sight of that dreary shore.

June 3d, a deep inlet was visible in the middle of the immense islets of ice that we were coasting along ; we entered into it, and had a toilsome passage of about twelve hours ; but it was so blocked up, that we were obliged at last to return. A heavy gale from the S. W. bringing vast masses of icy fragments into contact, threatened to close in upon us, and it was not without prodigious exertions that we got at length into the open sea.

We now began to lose all hopes of reaching Spitzberg, which was one part of our destination. Some days before we had captured some whale-ships, the captains of which assured us that they had been engaged in the same fruitless attempt, and that the ice had rendered all approach impracticable.

Our ships' companies were very much worn down with incessant fatigue, in a painful navigation, that called for constant watching and active exertion. The scurvy was preying upon us, and some of our best seamen had fallen victims to it ; our water and wood grew scanty ; the want of wood prevented us from getting at water with the melted ice. We tried, but in vain, to procure heat enough for this purpose, by resorting to different methods in all the warmest parts of the ship.

The perplexities of such a situation called for a speedy change of measures ; our chief, however, to shelter himself from every imputation of neglect, would make one more ef-

fort to find a passage through the solid ice, advancing as far north as possible ; in this hope, we kept continually bearing up along the chain of immoveable ice that stretched to the N.W.

In fact, we reached the 80th degree of latitude, without gaining any inlet or opening. The whole vast plain, or rather continent of ice, lies in a direction to the west. We coasted it for several days without finding any break or interruption, and I am convinced that it joins all along to the ice that borders the coast of Greenland.

I shall not attempt to describe the impressions that the solitary and dreary aspect of this icy continent produced on our minds. Its situation on the limits of our globe, the profound silence pervading its vast domain, the total absence of animal life—every thing seemed to exhibit an image of death, and of all nature in mourning. The gloomy spectacle was not, however, without a sort of peculiar attraction ; masses of ice, illumined in different modes, reflecting the light in a thousand different ways, from the odd assemblage of their needle points or ends ; their fractures, their varied shapes, presented views as uncommon as they were astonishing. We used frequently to compare them to the ruins of some most extensive capital discerned at a distance ; the imagination taking wing, would depict colonnades, towers, steeples, castles, fortresses, &c. In the remote back-ground appeared a chain of lofty mountains of ice that terminated the horizon.

There being no prospect of penetrating further north, and it being impossible to touch at Spitzberg, we resolved on steering southward, having taken and burnt, in the north seas, fifteen whale-fishery ships.

Here we may remark, that Captain Phipps did not encounter the chain of ice till he was north of Spitzberg, whereas it blocked up our passage at the 77th degree.

In the course of our navigation in these parts, we never had a heavy sea, though the wind was frequently very high ; the waves were, in some measure, fettered under the mass of ice. We could observe, however, after Captain Phipps, on nearing the great banks, even in calm weather, big surges coming gently from the south.

In those high latitudes the sky is seldom so clear as to be able to make astronomical observations. We availed ourselves of every favourable circumstance that occurred, but it was only three times that we could take the meridian altitude of the sun at midnight.

Scarcity and scorbutic diseases called for prompt relief ;

our commandant at first was making for the Bay of Strunsa, in Danish Lapland; but contrary winds forced us to relinquish this intention, and to bear away for Iceland.

July 3d, we were off Langeness, the N.E. point of that large island; as we meant to bring up in the Bay of Patrix Fiord, at the opposite extremity, our course made us nearly go the circuit of it, and we seized the opportunity of adding to our geographical information, with respect to the coasts of a country so little known.

Langeness, or Long Point, is easily to be distinguished; it is a low land, stretching a great way into the sea. I take it to be the only part of the island that has so very little of elevation; all the coasts are lofty, abrupt, and perpendicularly steep. Scarcely had we doubled this point, when we found high lands over-hanging us like walls; their rough and craggy indentations, the basaltic columns of their brown sides, feasted the eye with a spectacle truly picturesque; but not a glimpse of verdure, no signs of vegetation were discernible on a soil of which Vulcan alone seems to have possessed the property. At a very great distance we could distinguish the smoking summit of Mount Krafte, a considerable volcano, that makes part of the mountainous chain in the N.E. of the island.

On the 5th, we discovered the small island of Walzback, distant about five leagues from the Terra Firma; it stands so low, that it scarcely appears above the level of the sea. Kerguelen, who was in these seas in the years 1767 and 1768, reports, from the evidence of the whale-fishers, that no passage existed between Walsback and Iceland, from a chain of breakers stretching through it. We determined to ascertain this point, and bore up into the passage, finding a considerable depth of water everywhere, as it is all along on the coast. We were continually sounding, and the lead always brought up a portion of heavy volcanic sand, or a kind of black puzzolane.

July 6th, we reached the Isles of Portland, at the most southern extremity of the island; it was at this point that the Marquis Verdun de la Crenne terminated his voyage of discovery; when he came to visit Iceland, in 1771, in the frigate La Flore, having with him Borda and Pingré, for scientific purposes. The labours of those valuable men well deserve the praise of rigid accuracy; we have observed that the chart published by them in 1776, with respect to all the parts of the coast of Iceland which they visited, that is to say, the part from the Isles of Portland to Patrix Fiord, is traced with a precision that leaves nothing to be wished for, either in point of positions or of configurations.

We owe also a just tribute of eulogium to the engravings of the views of the coasts annexed to the relation of the voyage of La Flore, and designed by Ozanne, employed on board our frigate; nothing can be more correct, even to the very smallest details. As to the views of the same portions of coast, engraved in the relation of Kerguelen, they are rather to be censured than commended.

After exploring the whole southern coast of Iceland, we passed between Cape Reikia-ness and the Rocks of the Birds, in Icelandish, Ryke-yse. It was here that a very singular submarine phenomenon occurred, in 1783; the sea appeared covered with a light-blush flame, through an extent of more than a mile; it lasted several hours, and occasioned a very great consternation among the inhabitants of the neighbouring coast. When the flame ceased, a small island appeared on the scite, the surface of which was covered with pumice-stones and volcanic ashes. This islet has since disappeared, probably by another convulsion of the same kind.

In proceeding northwards, we crossed the great gulph of Faxa Fiordur,* having a view of Mount Jengel, or the Jokul of the west; its top covered with snow, though at more than twenty leagues distance. This is taken to be the highest mountain in Iceland.

It was in the gulph of Faxa Fiordur that we saw the sea covered with a sort of mollusca, or rather of *radiaire*, that seemed to constitute a new genus affiliated with the *medusas* and the *beroes*. I gave it the name of *idya*; a description, with a plate of it, was published in the Bulletin of Sciences, under the name of *idya Islandica*.

After doubling the Cape and Mount Jengel, we crossed the gulph of Breyde Fiordur; and, on the 13th of July, we entered the Bay of Patrix Fiord, where we anchored in eleven fathoms water, near the Danish factory.

The Bay of Patrix Fiord lies in 65 deg. 35 min. 45 sec. N. lat. and 26 deg. 29 min. 53 sec. W. long.; like all the other bays of the island, it is very deep, and encompassed with lofty, abrupt mountains. The entrance to it is very easy, and there is no danger to be apprehended.

The Danish factory stands on a low point, consisting of ancient lavas; the anchorage is within the point. The Danish establishment is divided into three wooden houses, one of which serves as a dwelling for the director, and the others are warehouses. Round about lie scattered the wretched huts of

* In Icelandish, the word *fiord*, or *fiordur*, signifies a gulph, or bay; *jokul*, or *jockel*, is appropriated to the high mountains.

the poor Icelanders, half buried in earth ; the roofing only, made of whales' ribs, rises above the surface. Behind these is a pool of fresh water, which has given to Patrix Fiord the Icelandish name of *Vatneyre*, the Water Town.

The bay may be about three leagues in length, from W. to E. ; its greatest breadth is about a league and a half. Very near the middle is a large sand-bank, which gets dry at low-water, and over which large vessels cannot pass. Besides the town or village of *Vatneyre*, there are others dispersed about the bay, at certain distances ; the most considerable is that of *Sadlangsdaler*, where there is a Lutheran church ; it lies on the side opposite to the Danish factory, on the banks of a sheet of water well stocked with salmon.

A chart of all the parts of the island that we visited, with a number of our own new discoveries and original remarks, were transmitted, on our return, to the minister of marine, together with a collection of seventeen designs, representing views of different coasts, some tracts or situations in Iceland, and various objects of natural history, either new or but little known.

The country round the bay presents a gloomy sort of prospect, but dignified and imposing ; every thing bears the impression of volcanic convulsions and of the ravages of earthquakes. All the mountains seem, at it were, calcinated ; you cannot walk except over lava and basalt, the fragments of which, disjoined, roll under your steps with a rattling and stunning noise ; only two colours, red and black, diversify the lugubrious landscape within the circle of your view. A good scene-painter for a theatre, who would make a drawing of the infernal regions, could copy no better model than one of the situations of Iceland.

One of the oddest spectacles that I ever beheld, was a very extensive platform, serving as a *cimex*, or crown, to the mountain that overlooks the anchorage of *Vatneyre*. It is composed of large tables of basalt, from eight to ten feet of surface, but on a level, and arranged regularly, one beside another, like so many leaves in a book ; the edge, not above four inches in thickness, every where meeting your view. In some parts, these basaltic tables, overset by earthquakes, yield such an image of disorder and confusion, that you would be led to think the spot (whereon no sign of vegetation or life appears) to be made up of the ruins of the globe.

In low places, at the entrance of the valleys, there is some little appearance of verdure ; a thick turf, with a few flowers scattered on it, may be seen on the banks of the running waters. I collected a number of plants, but little known in

Europe, large enough to form nearly the whole of the Icelandic Flora.

Not a single tree is to be seen in the whole district of Patrix Fiord ; and even in the other parts of the island, it is with difficulty you can light on a few dwarfish willows, and some stunted birch-trees. Many fruitless attempts have been made to sow or plant the pine and fir, from Europe ; but though they have succeeded in the fine season, the young shoots were never able to stand the long and rigorous winter of a climate so frozen. No credit must be given to what M. Horrebow reports, in his description of Iceland, wherein he makes mention of fruitful plains, and immense pastures ; his work, drawn up from the false accounts of the Dutch fishermen, is replete with the grossest errors. That of Anderson, built on the same authorities, is but little better ; and the fact is, that we have in Europe but very lame and imperfect accounts of this country, so very extraordinary and interesting in many respects.

Iceland extends from N. to S. between 66 deg. 44 min. and 62 deg. 22 min. 30 sec. lat. and from W. to E. between 27 deg. 5 min. and 18 deg. 26 min. long. W. of the meridian of Paris. Its greatest length may be about 133 leagues, and its breadth about fifty-six ; the island contains a superficies of about 5,500 square leagues.

Exclusive of a number of towns and hamlets, there are four principal cities ; but in Europe, these cities would only pass for villages ; they are built of wood, with planks brought from Denmark. The first is Holum, in the north ; the second, named Skalholt, is in the south ; both are the sees of a bishop. The third lies to the S. W., and is called Besested ; this is the residence of the governor, and the only place in the island where there is a small fort armed with six eight-pounders, mounted on carriages that are falling to pieces with age ; to the N.E. is the fourth city, called Skrida.

The interior of Iceland is but little known ; the whole island, however, may be pronounced a mass of volcanic rocks, whose sides, black and burnt, whose summits, sharp and craggy, present a prospect of the most singular kind. There is not a single point in this sad country which does not seem to have undergone the action of fire ; one consequence is, that there is not a country on the globe more fertile in volcanic phenomena.

The mountains, which are all very lofty, are formed of lava and basalt ; you cannot find there the slightest vestige of vegetable soil. In winter, the extreme cold splits these calcined mountains, and causes enormous fragments of them to fly off, which, in their fall, divide into a number of others,

which roll precipitously into the roads and ways, like so many torrents, to overwhelm and obliterate the traces of them.

I was witness to several of these sorts of *avalanches*, which sometimes also take place in the fine season, but ever with a frightful noise, and a smell resembling that which arises from the calcination of bricks or lime-stone.

Not only the cold, but frequent earthquakes shake and overthrow the mountains of Iceland to their foundations; cleaving, disarranging, changing the direction of their constituent materials, which lose their consistence.

A number of mountains present extinguished craters; others are still ignivorous. In the interior of the island, some terrible eruptions took place in 1734, 1752, and 1755. The principal volcano, at present, is the mountain *Krafte*, which is ever emitting smoke and lava. *Hekla*, at the time of our stay there, was in a state of repose, but it has had new eruptions since.

Hot-springs and fountains are very numerous in the island; they excel all others known, in the abundance and degree of heat of their waters. The principal are, the springs of *Geyser*, situated at about two days walking journey from *Hekla*, and near *Skalholt*; they issue alternately from three successive jetteaux of a considerable height. We saw one between *Patrix Fiord* and *Lusbay*, hot enough for the Icelanders to dress their victuals in.

The exterior geography of Iceland, that is to say, of the coasts, is as yet a desideratum for nearly the whole; the northern part is the least frequented, and the least known. The charts we had of them before the voyage of *La Flore*, had been copied from documents grounded on accounts of the Flemish and Dutch fishermen, and do not merit confidence. The chart published in 1767, in the French *Neptune*, is taken from *M. Horrebow's*; though better than the rest, with respect to the general configuration of the lands, it is full of errors as to the longitudes of places.

All the ancient Dutch charts place in the entrance, and about three leagues from the bay of *Patrix Fiord*, a group of ten islets, called *Gouberman's Islands*; there is not, however, the least trace of them. It is certain that the group must have formerly been in the situation, as the tradition of them is kept up in the country, and they have doubtless been overwhelmed, in consequence of some sub-marine convulsion. The same fate has probably carried away *Pepy's Island*, which is now no where to be found, but which stands in the ancient charts near the eastern coast of Iceland, in 64 degrees of latitude.

These extraordinary phenomena are of frequent occurrence, and they change, in some measure, the face of nature, and the general aspect of the coasts of the country. It does not appear, however, that they impede the progress of navigation; the shores are every where steep, the anchorage good, and the bottom is generally of volcanic gravel, or pebbles, and broken shells; and often the two substances are found united. There are on the coasts a number of deep bays, where ships may ride in perfect security, covered by the high lands that encircle them.

The general population of the island at present is about 40,000 souls; formerly it amounted to 60,000; but the scurvy, and especially the small-pox, which proved very fatal in 1707 and 1708, have greatly diminished the population, and are still very destructive. The governor-general, Van Tramp, who came to pay us a visit at Patrix Fiord, informed us that every year the number of deaths exceeded that of the births. In time, perhaps, the inhabitants of this country, who, besides, are addicted to insalubrious modes of living, will insensibly become extinct.

Iceland, subject to the crown of Denmark from the 13th century,* is rather an expensive charge than a profitable possession; the king only receives from it 140,000 francs per annum, and the whole of this scanty revenue is absorbed in the charges of the governor, of the bailiffs, and ecclesiastics, with the provisions and other expences of their household.

Notwithstanding its poverty, this country allured the cupidity of some Barbary corsairs, who, in 1626, landed here and carried off a number of the wretched inhabitants, whom they made slaves of. They were again visited in 1687, by other pirates, who practised the most horrid cruelties on the unfortunate natives, totally bereft of all means of defence.

These two examples are on record, yet the King of Denmark does not keep here any military force, nor have the Icelanders arms of any description; a gun, with powder and shot, is an object of curiosity, almost as much as with the inhabitants of the South-Sea Islands. We had pressing solicitations to indulge such curiosity, but it was only to expend in the chase; their peaceable character not suffering them to think of any other mode of application.

Of all other people, the Icelanders are, perhaps, those who have retained the primitive patriarchal manners in the greatest purity; they are good, loyal, hospitable, and unacquainted with any of those violent passions which, in other parts of the

* It was in the year 1261 that the Icelanders voluntarily submitted to Haquin, King of Norway.

world, lead men to act the part of butchers to each other. The Icelanders may, however, be characterised as indolent, and, in some respects, of an apathetic turn. An intimate union subsists among them; those of the same family seldom separate. The tenderness of parents for their offspring, the piety of these towards the authors of their being, are virtues of which we witnessed illustrious and affecting examples. No suspicion or distrust, one of the other, can be found here; theft and robbery are absolutely unknown; and, even during absence, the doors of their huts or cabins are always left open.

At the first glance, one would conceive the Icelanders to be the most wretched of men, the most destitute of the conveniences of life, and their condition to be the most frightful; but when we reflect on their unagitated character, on the few wants they feel, and the facility with which they can provide for them; if we consider, likewise, the sweet and intimate union that links them in the bonds of friendship, we must adopt another way of thinking, and even consider them as happier than the Europeans, whose enjoyments are mingled with so many perplexing circumstances, originating in ambition, in disappointments, in bodily infirmities, and the illusions and disquietudes of a thousand different passions.

The Icelander, satisfied with his lot, prefers his dreary country to all the charms of a more polished society in Europe. Such of them as have visited Copenhagen, in lieu of being smitten with the rural scenery of Denmark, were ever regretting their burnt mountains and eternal snows; and though numbers of them will turn out and volunteer, as seamen, on board Danish, or other vessels, they are sure in the end to return to their native isle, to mingle their ashes with those of their ancestors.

Although exiled, as it were, and having little communication with the rest of the world, the Icelanders are gifted with a quickness of intellect, and supplied with a measure of instruction which raises the lowest of them above the class of our villagers. In general, they speak Latin pretty well. In the eleventh century, science and literature were successfully cultivated here, while, at the same period, Europe was immersed in the depth of ignorance. Their MSS. composed at a period so remote, treat of astronomy, of physics, of natural history, of morals, and philosophy in general. Sir Joseph Banks, a celebrated naturalist, and worthy companion of Captain Cook, was in Iceland in 1772; he brought away 162 valuable MSS. which he presented to the British Museum.

The native language of the Icelanders is a very ancient dialect of the Celtic; it is not without its poetical effusions,

with songs or odes that turn on the heroic traditions of the most distant times, and were recited by the bards, called *Scaldes*. Their ancient mythology is exactly that of the Scandinavians, from whom they are descended: thus their traditions report the names of Odia and Frega; of Hella and the goddesses Valkiries; the aerial combats of the Shades; the delicious residence of Valhalla, or the palace of Odin, wherein the spirits of departed heroes enjoy true felicity after their decease.

I could only find in Iceland one single kind of antique monuments; these are tumuli, or tombs of pebbles and small stones heaped together; three of this description we recognised on the point of Vatneyre. All the voyagers who have made mention of them, have represented these pyramidal forms as raised expressly to point out the places of anchorage, and to serve as beacons to vessels entering the bay; but the director of the Danish factory assured me that they were ancient sepulchres, and he earnestly recommended to us to forbid our men from despoiling or degrading them, as it would be a serious affliction to the natives, who could not see us even approach them without symptoms of pain and uneasiness.

In France we have a great number of similar monuments, which may be traced to the Celtic times; among others, is one in the Morbihan, near the famous *men-hirs* of Carnak, that stand in a row, and which rises nearly a hundred feet in height.

The wood necessary for constructing their fishing-vessels is brought from Denmark, for not a single tree is to be seen on the island. The only fuel the inhabitants have is fish-bones, with turfs of peat-moss, and a sort of *lignite*, or wood half mineralised, and very bituminous, that is found in the mountains.

The Icelanders are extremely sober, but their unwholesome diet is productive of different diseases; it chiefly consists of raw fish, dried in the sun, and of sheep's-heads, preserved in a sort of vinegar, which they make with the juice of sorrel. They eat also a sort of sea-weed (*fucus saccharinus*), boiled in milk; and they make soup of the lichen *Islandicus* reduced to powder. They are strangers to our bread, and a fragment of worm-eaten biscuit was a treat to them. Water and milk are their only beverage, and they ever testified a great dislike for our wines and strong liquors.

Iceland may be considered as a very singular country, in respect of its natural history, as yet but little known, and still more so in a geological view, as teeming with observations most curious and important. The mineralogist might here

collect a rich treasure of lavas, basalts, and pumices. In the vicinity of Patrix Fiord, we found beautiful crystals of feldspath, of analcime, of melonite, of amphibgene, and zeolithe; these substances are commonly to be found in the cavities of the lavas.

I saw also, on the crater of an extinguished volcano, some octaedre crystals of native sulphur, involved in a whitish clayey substance; also the *obsidian* stone of the ancient mineralogists may frequently be met with.

There is no abundant variety of botanical plants in a climate so northerly, more particularly in the class of *Phanerogames*.

Here follows a list of the various species that I have observed:—

1 Fucus saccharinus.	27 Saxifraga aspera.
2 Fucus nodosus.	28 Saxifraga stellaris.
3 Fucus vesiculosus.	29 Salix lanata.
4 Fucus loreus.	30 Salix capraea.
5 Fucus carneus.	31 Carpinus betulus.
6 Fucus plumosus.	32 Dryas octopetala.
7 Ulva lactuca.	33 Pinguicula vulgaris.
8 Zostera marina.	34 Papaver alpinum.
9 Hypnum squarrosum.	35 Eriophorum vaginatum.
10 Minium fontanum.	36 Rhodiola rosea.
11 Lichen Islandicus.	37 Carex
12 Lichen chalybeiformis.	38 Barthia alpina.
13 Lichen spinosus.	39 Vaccinium vitis Idea.
14 Lichen muralis.	40 Silene rupestris.
15 Lichen rangiferus.	41 Silene arenaria.
16 Lichen paschalidis.	42 Alsine media.
17 Lichen pixidatus.	43 Rumex scutellatus.
18 Juncus spicatus.	44 Allium
19 Anthericum calycinum.	45 Cochlearia Groenlandica.
20 Draba muralis.	46 Sedum villosum.
21 Draba incana.	47 Thlaspi alliacea.
22 Saxifraga tridactylites.	48 Cerastium repens.
23 Saxifraga oppositifolia.	49 Geranium repens.
24 Erigeron uniflorum.	50 Ranunculus sulfureus.
25 Arabis thaliana.	51 Viola calcarata.
26 Polygonum viviparum.	

There is a greater variety in the productions of Zoology. The mammiferous animals of the island are—

1. The horse, which is small, but very numerous. It is of great use for travelling, walking with a sure step on the edge of precipices, and over the sharp fragments of basalt that lie in heaps in the paths.

2. The bull, or ox, is poor and lean, and the island is but scantily stocked with them.

3. The sheep are very numerous, of a good size, and commonly very fat. Most of the rams have four and even five horns.

4. The dog is about the size of our shepherd's dogs, which he pretty much resembles. The ears are straight, but gashed or broken at their extremities ; this is a character peculiar to the Iceland dogs.

5. The *Isatis*, or *Canis Lagopus* of Linnaeus, is very common in Iceland. The natives call him the blue fox, from the slate-coloured tinge of his hair ; he is very destructive to the flocks. Though a carnivorous animal, he will likewise eat grass, for I found a quantity of it in the stomach of a young one killed near Vatneyre. What was still more singular, we found in the viscera of this animal the opercules and other remnants of a shell-fish, common on the shore. I was not aware, till then, that mammiferous animals of this description would eat shell-fish, and particularly such whose shell is so hard; nor, I conceive, has the fact been hitherto noticed by naturalists.

6. The white bear is not a native of Iceland, but frequently arrives there on floating fragments of ice that are carried thither from the coasts of Greenland. On the appearance of these terrible animals, the inhabitants sound an alarm, and collect from every quarter to chace and destroy them before they have time to multiply.

7. The seal is very common. We saw more than once, round the bay of Leduc, another species of seal of the very largest dimensions, being eight or ten feet in length. The head, instead of terminating in a pointed muzzle, as in the preceding tribe, is large, wide, and much like that of a dog. The colour, taken altogether, of the animal, is that of grey ashes ; unlike the rest of his genus, he is very shy and ferocious, and will let none approach him. I could only kill one of them.

8. The whale, designated by Linnaeus as the *balæna mysticetus*, is less common here than at Spitzberg,

9. The gibber, or north caper, *balæna physalus*, is frequently met with on the coasts of Iceland.

Birds are in greater number and variety than the mammiferous animals ; but the marine species are the most numerous. We saw none, however, that are not well known to ornithologists. Such as,

- 1 *Aquila chrysaëtos.*
- 2 *Aquila ossifraga.*
- 3 *Aquila Canadensis.*
- 4 *Falco haliætos.*
- 5 *Falco communis.*
- 6 *Falco candicans.*
- 7 *Strix scandiaca.*
- 8 *Strix aluco.*
- 9 *Corvus corax.*

- 10 *Emberiza nivalis.*
- 11 *Fringilla vulgaris.*
- 12 *Charadrius auratus.*
- 13 *Scolopax gallinago.*
- 14 *Anas cygnus.*
- 15 *Anas fusca.*
- 16 *Anas anser.*
- 17 *Anas borealis.*
- 18 *Anas mollissima.*

19 Alca arctica.	25 Colymbus immer.
20 Alca alce.	26 Colymbus glacialis.
21 Procellaria pelagica.	27 Larus rissa.
22 Procellaria glacialis.	28 Larus eburneus.
23 Uria grylle.	29 Sterna hirundo.
24 Uria troile.	

We found no description of reptiles whatever on the island.

Fish are in abundance, but with few varieties.

The following are the several kinds:—

1 Pleuronectus hippocampus.	5 Gadus morhua.
2 Pleuronectus flesus.	6 Cyclopterus lumpus.
3 Salmo salar.	7 Anarrhicas lupus.
4 Salmo trutta.	8 Squalus glaucus.

The seas which wash these coasts abound with the molusca and *radiaire*, but the short time of our residence in the island did not permit us to notice them all. The most common species are the *doris stellata* and *pilosa*, the *clios borealis* and *limacina*, the *asterias glacialis*, the *medusa capillata*, and the new kind which I have described under the name of *idya Islandica*.

The shells contain several new species of the *tellina*, the *patella*, and the *buccinum*; we also met with a very large species of *médiole*, the *pecten Islandicus*, the *buccinum nudatum*, and the *lapillus*; also some species of the *trochus*, of the *meretrix mercatoria*; as also of the common muscle and the sea-urchin, which are very good eating.

Insects are no strangers to the climate, notwithstanding its extreme rigour; but they are few in number, and mostly of the order of dipteres, and of the genera *culex*, *tipula*, *syrphus*, and *bibio* of Linnæus. I also met with a new species of the *curculio*, or weasle; and a very singular kind of night-bird.

There are several of the crustaceous kind, such as the *cancer*, or crab; the *maja*, the *crangon*, *palæman*, *gammarus*, &c.; and among the Zoophytes, some very beautiful species of corallines.

Such are part of the observations that I made during a stay of eighteen days, as well from my own researches as from the conversation with the physician to the governor, Van Tramp, a very intelligent character, who came at times to visit us, with all his suite, during our residence at Patrix Fiord. This gentleman, who had studied in the university of Upsal, had been a pupil of Linnæus.

A traveller that should make a longer residence in the island, and penetrate further into the interior, would find there a multitude of new facts, the narrative of which would be extremely interesting; this country, I repeat it, is almost entirely new to us with respect to its scientific reports and relations.

The Bay of Patrix Fiord is one of the most convenient points for the navigator; water, fish, and mutton, are in the greatest plenty; excellent game may be had, in several different sorts of sea-fowl; but wood is not to be procured at any price.

During our stay we set up some tents for our sick men, who very soon recovered, more especially from the use of the antiscorbutic vegetables that grow spontaneously in the island, and are frequently to be met with. The sea in this bay does not rise above eight feet in the highest tides. The variation of the needle was 33 deg. 45 min. to the N. W.

July 30, we hoisted sail, and leaving the Bay of Patrix Fiord, we bore away for the south, till we began again to distinguish Mount Jeugel; soon after, bidding a final adieu to Iceland, we thought only of hastening our return to France.

Once more we passed over the point wherein the ancient charts placed the Isle of Bus, which we had before explored in vain; we were not more fortunate this time; but, as on the former occasion, we had to encounter a broken, rippling water, the usual indication of shoals and shallows.

On August the 18th, we were on the coast of Ireland; we cruised there several days, at the entrance of the Bay of Donegal; we then steered for Cape Clear, which we doubled, to cruise on the Soles; at last we entered the Channel; and, on the 27th of September, cast anchor in the Road of the Isle of Brehut.



